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10/597,892

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EXAMINER

LETTMAN, BRYAN MATTHEW

ART UNIT

PAPER NUMBER

3746

MAIL DATE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/597,892	Applicant(s) KALLESOE, CARSTEN	
	Examiner Bryan Lettman	Art Unit 3746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 August 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☒ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>20080811</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings are objected to because there are reference numerals in Figure 4 which are difficult to read. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

The abstract of the disclosure is objected to because it contains legal phraseology. Correction is required. See MPEP § 608.01(b).

Claim Objections

Claims 2, 7-11 and 17 are objected to because of the following informalities:

In claim 2, lines 2-3, "on the one hand," should be deleted.

In claim 2, line 4, "and on the other hand" should be changed to "wherein".

In claim 2, lines 7, "value, wherein," should be changed to "value, and wherein".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 3, it is unclear how the variables are detected.

In claim 1, line 5, it is unclear how one determines whether a fault is present or not by way of the result.

In claim 2, line 3, the limitation “preferably” is indefinite. The Examiner suggests changing this to “are”.

Claims 8-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 8 is indefinite because the variable “ ω ” is used for both “the angular speed of the rotor and impeller” as well as “the actual rotor and impeller rotational speed”.

Claim 8 is indefinite because the variables R_r and R_r' are both used for the “equivalent resistance of the rotor winding.”

Claim 8 is indefinite because the variables R_s and R_s' are both used for the “equivalent resistance of the stator winding.”

Claim 9 is indefinite because it is unclear how the variables $a_{h0} - a_{h2}$, $a_{t0} - a_{t2}$, B and J are fixed.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what the variable “ Q ” refers to in equation 18.

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Claim 21 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear what "it" is in line 2 of claim 21. The Examiner notes that in further interpreting the claims, it is assumed that "it" refers to "the device".

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-13 and 15-22 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claimed invention is directed to a judicial exception to 35 U.S.C. 101 (i.e., an abstract idea, natural phenomenon, or law of nature) and is not directed to a practical application of such judicial exception (because the claim does not require any physical transformation and the invention as claimed does not produce a useful, concrete, and tangible result).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 3-6, 14, 15 and 18-22 are rejected under 35 U.S.C. 102(b) as being anticipated by U. S. Patent 6,655,922 to Flek.

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Referring to claim 1, Flek discloses a method for determining faults in the operation of a pump assembly comprising the steps wherein:

at least two electrical variables of the motor which determine the electrical power of the motor (col. 5, lines 37-58), and at least one changing hydraulic variable of the pump (col. 4, lines 56-61, col. 5, lines 4-11) are detected,

the detected values are automatically compared to predefined values by way of electronic data processing (col. 5, lines 40-49, col. 5 line 64 – col. 6 line 11), and

one determines whether a fault is present or not by way of the result (col. 6, lines 12-28).

Referring to claim 3, Flek discloses a method for determining faults in the operation of a pump assembly comprising the steps wherein:

when the presence of a fault is determined, one then further determines as to which fault it is a case of (col. 6, lines 22-28).

Referring to claim 4, Flek discloses a method for determining faults in the operation of a pump assembly comprising the steps wherein:

the detected hydraulic variable is the pressure produced by the pump (col. 5, lines 8-11).

Referring to claim 5, Flek discloses a method for determining faults in the operation of a pump assembly comprising the steps wherein:

the detected hydraulic variable is the delivery quantity of the pump (col. 5, lines 4-7).

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Referring to claim 6, Flek discloses a method for determining faults in the operation of a pump assembly comprising the steps wherein:

the detected hydraulic variable is the differential pressure between the suction side and the pressure side of the pump (col. 5, lines 19-20).

Referring to claims 14 and 15, Flek discloses a method for determining faults in the operation of a pump assembly comprising the steps wherein:

on determining a fault, the pump assembly is activated with a changed rotational speed, in order by way of the measurement results which then set in, to more accurately specify the determined fault (col. 5, line 59 – col. 6, line 28), and

the mechanical-hydraulic pump/motor model also includes at least parts of the hydraulic system affected by the pump, in a manner such that faults of the hydraulic system may also be determined (col. 5, line 59 – col. 6, line 28).

Referring to claim 18, Flek discloses a device for determining faults in the operation of a centrifugal pump assembly comprising:

means for detecting two electrical variables (the Examiner notes that this limitation is herein examined according to 35 USC 112 6th paragraph) which determine the power of the motor (46, 50, 52, col. 5, lines 37-58),

means for detecting (24, 38, 40) (the Examiner notes that this limitation is herein examined according to 35 USC 112 6th paragraph) at least one changing hydraulic variable of the pump (col. 4, lines 56-61, col. 5, lines 4-11), and

an evaluation means (66, 150) (the Examiner notes that this limitation does not meet the requirements of 35 USC 112 6th paragraph) which determines a fault

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condition of the pump assembly by way of the detected variables (col. 5, lines 40-49, col. 5 line 64 – col. 6 line 28).

Referring to claim 19, Flek further discloses a device for determining faults in the operation of a centrifugal pump assembly comprising:

means for storing pre-defined values are provided (this is inherent feature of the control system 18), wherein the evaluation means comprises means for comparison of the detected variables with the predefined values (col. 5, lines 40-49, col. 5 line 64 – col. 6 line 28).

Referring to claim 20, Flek further discloses a device for determining faults in the operation of a centrifugal pump assembly comprising:

the evaluation means (66, 150) comprises means for the computed linking of the detected variables (col. 5, line 59 – col. 6, line 28).

Referring to claim 21, Flek further discloses a device for determining faults in the operation of a centrifugal pump assembly wherein:

the device is an integral component of the motor electronics (col. 5, lines 28-30).

Referring to claim 22, Flek further discloses a device for determining faults in the operation of a centrifugal pump assembly wherein:

means (the Examiner notes that this limitation does not meet the requirements of 35 USC 112 6th paragraph) are provided to produce and transmit at least one fault notification (col. 6, lines 60-64).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 6,655,922 to Flek in view of U. S. Patent 5,447,414 to Nordby.

Referring to claim 2, Flek teaches all the limitations of claim 1, and further teaches a method for determining faults in the operation of a pump assembly comprising the steps wherein:

the two electrical variables of the motor which determine the electrical power of the motor include the current feeding the motor, and are mathematically linked for achieving at least one comparison value (col. 5, lines 37-58),

the at least one changing hydraulic variable of the pump, as well as at least one further mechanical or hydraulic variable determining the power of the pump are mathematically linked for achieving at least one comparison value (col. 5, lines 40-49, col. 5 line 64 – col. 6 line 11), and

one determines whether a fault is present or not by way of the results of the mathematical linking by comparison with predefined values (col. 6, lines 12-28).

Flek does not teach sensing the voltage prevailing at the motor. Nordby teaches a control method wherein two electrical variables of the motor used by a pump motor

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control method include the voltage prevailing at the motor and the current feeding the motor (shown in Fig. 1; col. 3, lines 49-62).

It would be obvious to one of skill in the art, at the time of invention, to modify the pump control method taught by Flek with the motor variables taught by Nordby in order to improve the accuracy and resolution of the control method by providing more inputs.

Referring to claim 7, Flek and Nordby teach all the limitations of claim 2, as detailed above, and Flek further teaches a method for determining faults in the operation of a pump assembly comprising the steps wherein:

a mathematical, electrical motor model is used in combination with a mathematical, mechanical-hydraulic pump/motor model for the mathematical linking (col. 5, lines 37-58).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bryan Lettman whose telephone number is (571) 270-7860. The examiner can normally be reached on Monday - Thursday between 9:00 am and 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Devon Kramer can be reached on (571) 272-7118. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Devon C Kramer/
Supervisory Patent Examiner, Art
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